

DECODE X | 2026

03 – Case MOBILITY SHIFT

Stage 1 – Baseline Network Diagnostics & Growth-Aware Forecasting

 28 February 2026 | 11:00 AM

1. Executive Context

Dubai RTA manages a multi-corridor bus network serving:

- CBD corridors (Downtown, Business Bay, Deira)
- Coastal tourism belt (Marina)
- Residential zones (Al Qusais, International City)
- Industrial corridor (Jebel Ali)

Between 2022 and mid-2025:

- Urban population expanded steadily
- Tourism exhibited strong seasonal variation
- Road congestion intensified gradually
- Corridor-level demand divergence increased

The Board mandate:

“Align demand, corridor efficiency, and fleet allocation under accelerating urban growth.”

This is no longer a capacity estimation problem.

It is a system efficiency and allocation optimization problem under growth and congestion pressure.

2. Operating Environment Characteristics

A. Demand Environment

- Winter uplift (Nov–Mar)
- Summer moderation (Jun–Aug)
- Event-driven mobility shifts
- Weekday/weekend divergence
- Non-uniform corridor growth

B. Network Structure

Routes categorized as:

- City
- Express
- Feeder
- Intercity

Stop-level demand varies by:

- Urban Zone
- Route Type
- Day Type
- Congestion Level

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C. Congestion Interaction

Congestion affects:

- Average speed
- Effective capacity
- Load redistribution
- Reliability

Full stationarity must not be assumed.

3. Data Provided

A. Network Structure

- Bus_Routes.csv
- Bus_Stops.csv
- Route_Stop_Mapping.csv

B. Ridership Data (Training)

- Train_Ridership_2022_to_2025H1.csv

Derived metric (recommended): [Total_Pax = Boarding_Count + Alighting_Count]

C. Traffic Data

- Train_Traffic_2022_to_2025H1.csv

Datasets must be merged using:

- Route_ID
- Stop_ID
- Date

Incorrect relational merging may materially distort corridor analysis.

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4. Advisory Mandate

You must:

1. Diagnose multi-year demand dynamics (2022–H1 2025).
2. Detect seasonality and weekday/weekend divergence.
3. Identify corridor-level structural imbalance.
4. Model congestion–demand interaction.
5. Forecast route-level daily demand for: **July 1 – December 31, 2025.**
 - a) Identify:
 - Overload risk corridors
 - Underutilized capacity
 - Emerging imbalance
 - b) Propose operational adjustments:
 - Fleet reallocation
 - Headway modification
 - Corridor prioritization

5. Stage 1 Expectations

By 7:00 PM, you should have:

- Growth decomposition
- Seasonal insight
- Route-type comparison
- Congestion elasticity understanding
- Baseline forecast
- Initial allocation strategy